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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,164	06/21/2001	Ken Masaoka	Q62630	3964

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SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
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Washington, DC 20037-3213

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/885,164

Applicant(s)

MASAOKA ET AL.

Examiner

Justin R Fischer

Art Unit

1733

[Handwritten signature]

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 27-48 is/are pending in the application.
- 4a) Of the above claim(s) 37-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,12-14,21-24,27-31,33-36,44,45,47 and 48 is/are rejected.
- 7) ☒ Claim(s) 3-11,15-20,25, 32,43 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 12-14, 22, 27-31, 34, 44, 45, 47, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horst (EP 0173670, newly cited) and further in view of Mechanics of Pneumatic Tires (Pages 360-363 and 372, of record). As best depicted in Figures 1 and 4-6, Horst teaches a pneumatic tire construction having a belt reinforcement structure 6, wherein the maximum section width of the tire extends through the rim (it is located at the interface between the tire/carcass and the rim). It is noted that the claim as currently drafted does not restrict the presence of multiple maximum section width points as is the case in Horst. Furthermore, it is clearly evident from the Figures that (a) the tire/carcass structure has a pair of end portions that engage respective rim portions and (b) the tire/carcass structure has a pair of neighboring portions (that portion which is radially outward of the engagement between the end portions and the rim) that are adjacent said end portions and have a center of curvature that is located outside of said carcass ply with respect to the rotational axis of the tire. Horst, however, fails to expressly define the tire/carcass structure as being composed of at least one cord-reinforced ply. In any event, a carcass defined by at least one cord-reinforced ply represents a fundamental structure of modern day tire

constructions that provide the necessary reinforcement and stability, as evidenced by Mechanics of Pneumatic Tires. One of ordinary skill in the art at the time of the invention would have found it obvious to define the carcass of Horst with at least one cord-reinforced ply since this design is consistent with the fundamental tire structure of modern day tires.

With respect to claim 2, the rim 1' of Horst contains a protrusion 12 that can be viewed as an inner rim flange.

Regarding claims 12, 13, and 31, as is well known, the carcass structure is defined by a main portion that extends over the crown/belt region and each of the respective sidewall regions and a bead portion that terminates adjacent the rim. In this instance, Horst does include a bead core 8 in the bead portion of the tire/carcass structure. As to claim 13, it is evident from the Figures of Horst that the bead portion (of the carcass ply) protrudes radially inward (from the main carcass portion) and engages with a groove in the rim- this is the region where the bead cores are located as required by the claimed invention. This construction is different from one in which the bead portion of the carcass is arranged parallel to the tire rotational axis. Thus, the bead portion that engages the rim is seen to constitute the protruding portion as defined by the claimed invention.

As to claim 14, it is extremely well known and conventional to anchor the cord reinforced plies of the carcass structure around the respective beads (provides a stable arrangement in the bead region where a great deal of stresses are realized).

With respect to claims 22, 28-30, and 34, the bead cores, which are formed of steel wires, are seen to constitute a reinforcing layer, it being noted that claim 28 does not require bead cores and a reinforcing layer. Also, the steel wires are arranged in an approximately circumferential direction that intersects with either a bias or radial carcass structure. In this instance, the steel cords of wires of Horst are seen to constitute a metal spring.

Regarding claims 44 and 47, while Horst fails to expressly suggest a quantitative value for the radius of curvature, the claimed invention defines a broad range of values between 0 and 50 millimeters- it would have been within the purview of one of ordinary skill in the art at the time of the invention to appropriately select a specific tire/carcass design depending on the desired function and reinforcement. It is emphasized that Horst positively teaches the claimed curvature in the neighboring portions of the tire/carcass structure, wherein the radius of curvature is outward (radially) of the carcass ply defining the neighboring portion.

As to claims 45 and 48, the curvature of the neighboring portions depicted by Horst is consistent with that set forth by the claimed invention- one of ordinary skill in the art at the time of the invention would have expected the neighboring portions to be deformed inwardly upon the application of a stress in the equatorial plane of the tire.

3. Claims 21, 23, 33, and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Horst and Mechanics of Pneumatic Tires as applied in claims 12 and 31 above and further in view of Yamada (US 5,423,366, of record). In describing the bead core, Horst generically describes the use of conventional steel wires- the reference is completely

silent with respect to the construction of the bead core and thus necessarily fails to define the claimed relationship regarding the spring constant. As described by applicant, the spring constant is directly correlated to the aspect ratio of the bead core, wherein a bead core having a larger width as compared to the height demonstrates a larger spring constant in the tire width as compared to the circumferential direction. One of ordinary skill in the art at the time of the invention would have readily appreciated a bead core design having a larger spring constant in the width direction, as compared to the circumferential direction, since bead cores having larger widths, as compared to heights, are well known and extensively used in the tire industry. Yamada describes one example in which the ratio of the bead core height to bead width is between 1.7 and 3.3 (Column 3, Lines 40-45). Although Yamada is directed to heavy duty tires, the reference more generally recognizes the use of such bead core constructions in the tire industry- the reference in no way suggests the use of such bead core constructions in only heavy duty tires. As such, it would have been obvious to one of ordinary skill in the art to use the well known bead construction defined by the claimed invention, there being no conclusive showing of unexpected results to establish a criticality for the claimed bead construction.

4. Claims 24 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horst and Mechanics of Pneumatic Tires as applied in claims 21 and 33 above and further in view of Unseld (US 5,665,298, of record). In describing the bead cores, the Horst suggests a construction formed of steel wires. However, it is also known in the tire industry to form bead cores of additional materials, such as thermoplastic resin

materials, including nylon. Unseld provides one example of the well-known use of thermoplastic resin materials in the formation of tire bead cores (Column 3, Lines 5-10). Thus, since the claimed materials are well known in the tire industry and recognized as being suitable bead core materials, one of ordinary skill in the art at the time of the invention would have found it obvious to form the bead cores of the respective tire constructions out of thermoplastic resin materials, there being no conclusive showing of unexpected results to establish a criticality for such a bead core design.

Allowable Subject Matter

5. Claims 3-11, 15-20, 25, 32, 43, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 3-11, 17-20, and 25, Horst fails to suggest a rim defined by a main body and at least one separate body. While such a rim construction is known in the tire industry, one of ordinary skill in the art at the time of the invention would not have found it obvious to incorporate such a rim in the unique tire structure of Horst.

Regarding claims 15, 16, and 32, the carcass structure of Horst fails to include a connecting portion that extends parallel to the rotational axis of the tire and is fixed in the rim- as depicted in Figures 1-6, the carcass structure is defined by a main portion (sidewall regions) and a bead portion that engages the rim, wherein the bead portion extends perpendicular to the rotational axis of the tire. Thus, the tire construction of Horst does not contain a connecting portion that bridges the aforementioned carcass

portions and thus necessarily fails to arrange the connecting portion parallel to the rotational axis of the tire.

With respect to claims 43 and 46, the starting angle (at interface between carcass and rim) in the tire of Horst appears to be approximately 90 degrees which is significantly larger than that required by the claimed invention- there is no suggestion by Horst to form the starting angle between 0 and 45 degrees and one of ordinary skill in the art at the time of the invention would not have found such an orientation obvious.

Response to Arguments

6. Applicant's arguments, see Pages 15-17, filed April 8, 2004, with respect to the rejection(s) of claim(s) 1-7, 12-18, 20-24, 26, 27, and 31-39 under 35 USC 102 and 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Horst, which is directed to a pneumatic tire construction in which the maximum cross section width extends through the rim and the neighboring portion of the carcass structure has a radius of curvature that is radially outward of the carcass in relation to the rotational axis of the tire.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone

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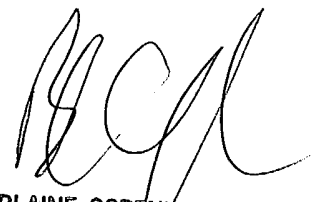
number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Justin Fischer

July 9, 2004



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